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ABSTRACT

This document, which reflects Mississippi's statutory requirement that instructional programs be based on core curricula and performance-based assessment, contains outlines of the instructional units required in local instructional management plans and daily lesson plans for two secondary-level courses in the building trades: building trades I and II. Presented first are a program description and course outline. Section I contains curriculum frameworks for both courses, and section II contains outlines of the instructional units required in each course. The first course consists of the following units: orientation; safety; construction math, measurement, and blueprint reading; hand tools, power tools, and stationary equipment; introduction to carpentry; introduction to electrical wiring; introduction to masonry; and introduction to plumbing. The second course contains these units: orientation; safety; advanced carpentry; advanced electrical wiring; advanced masonry; and advanced plumbing. Each unit includes suggested time on tasks, competencies and objectives, teaching strategies, assessment strategies, and resources. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (MN)

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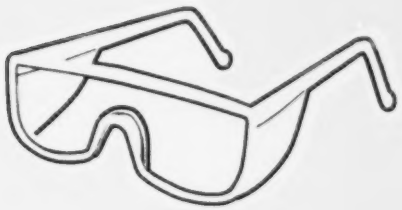
Mississippi Curriculum Framework for Building Trades



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Secondary Vocational and Technical Education 1996

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July 30, 1996

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CURRICULUM FRAMEWORK

FOR

BUILDING TRADES

(Program CIP: 46.0490 - Building Trades, General)

July 30, 1996

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FOREWORD

The courses in this document reflect the following statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended:

> The State Department of Education shall provide an instructional program and establish guidelines and procedures for managing such programs in the public schools as part of the State Program of Educational Accountability and Assessment of Performance. . .
>
> The department shall provide that such program or guidelines . . . are enforced through the performance-based accreditation system.
>
> The local school board must adopt the objectives that will form the core curriculum that will be systematically delivered throughout the district.
>
> Standards for student performance must be established for each core objective in the local program and those standards establish the district's definition of mastery for each objective.
>
> There shall be an annual review of student performance in the instructional program against locally established standards.

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - The number of days of instruction that should be required to teach the competencies and objectives of the unit. For secondary occupational programs, a "day" represents a two-period block of instruction.
- Competencies and Suggested Objectives
  - A **Competency** represents a general concept of performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to master all competencies in the curriculum framework in order to satisfactorily complete the course.
  - The **Suggested Objectives** represent the enabling and supporting knowledge and performances that will indicate mastery of the competency.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each suggested objective. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.

- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include classroom discussions, laboratory exercises, and student assignments. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Suggested Resources - This section indicates some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

The following guidelines were used in developing the curriculum framework in this document and should be considered in developing local instructional management plans and daily lesson plans:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For a one-year course, this means that the content of the existing units of instruction should represent approximately 135 days of instruction. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional units of instruction within the course related to topics not found in the state framework.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep Initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including work site learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the units of instruction within a course is left to the discretion of the local district. Naturally, foundation units related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other units related to specific skill areas in the course, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

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July 30, 1996

PROGRAM DESCRIPTION

BUILDING TRADES
(Program CIP: 46.0490 - Building Trades, General)

Building Trades I is an instructional program that orients an individual to the field of Building Trades. Building Trades II is a continuation of Building Trades I, and allows an individual to prepare for employment or continued education in the occupations of Carpentry, Electrical Wiring, Masonry, or Plumbing.

COURSE OUTLINE

BUILDING TRADES I

Unit No.	Unit Name	No. of Days
Unit 1:	Introduction and Orientation	5
Unit 2:	Safety	8
Unit 3:	Construction Math, Measurement, and Blueprint Reading	15
Unit 4:	Hand Tools, Power Tools, and Stationary Equipment	7
Unit 5:	Introduction to Carpentry	25
Unit 6:	Introduction to Electrical Wiring	25
Unit 7:	Introduction to Masonry	25
Unit 8:	Introduction to Plumbing	25

BUILDING TRADES II

Unit No.	Unit Name	No. of Days
Unit 1:	Introduction and Orientation (Review)	2
Unit 2:	Safety (Review)	5
Unit 3:	Advanced Carpentry	32
Unit 4:	Advanced Electrical Wiring	32
Unit 5:	Advanced Masonry	32
Unit 6:	Advanced Plumbing	32

SECTION I:

CURRICULUM FRAMEWORK

FOR

BUILDING TRADES

CURRICULUM FRAMEWORK

Course Name: Building Trades I

Course CIP Code: 46.0490

Course Description: Building Trades I is an instructional program that orients an individual to the field of Building Trades. Study in this course allows an individual to prepare for employment or continued education in the occupations of Carpentry, Electrical Wiring, Masonry, or Plumbing. Included are units of study in Introduction and Orientation; Safety; Construction Math, Measurement and Blueprint Reading; Hand Tools, Power Tools, and Stationary Equipment; Introduction to Carpentry; Introduction to Electrical Wiring; Introduction to Masonry; and Introduction to Plumbing. (2-2½ Carnegie Units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Explain the career opportunities associated with building trades.
   a. Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.
   b. Demonstrate personality traits to apply when serving the public.
   c. Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.
   d. Demonstrate desirable characteristics of the work ethic to apply in building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Describe vocational student organizations associated with building trades.
   a. Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Demonstrate job seeking skills to become employed in the building trades.
   a. Prepare a resume containing essential information.
   b. Complete a job application form.
   c. Describe procedures for a job interview.
   d. Demonstrate the role of an applicant in job interview.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
4. Explain personal and general safety rules for working in building trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.

d. Demonstrate safety practices for using climbing devices.
e. Describe state eye safety law, including appropriate times for wearing safety glasses.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

5. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
6. Apply measurement to the building trades.
   a. Identify measuring tools used in the building trades.
   b. Read measuring tools to 1/16th inch.
   c. Apply basic mathematics to building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
7. Apply blueprint reading to the building trades.
   a. Identify terms and definitions used in reading blueprints and working drawings.
   b. Identify the basic components of a blueprint.
   c. Identify the lines used on blueprints.
   d. Prepare a building layout.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
8. Utilize hand tools in the building trades.
   a. Identify hand tools used in the building trades.
   b. Demonstrate the maintenance of hand tools used in the building trades.
   c. Demonstrate the safe use of hand tools used in the building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6
9. Utilize power tools in the building trades.
   a. Identify power tools used in the building trades.
   b. Demonstrate the maintenance of power tools used in the building trades.
   c. Demonstrate the safe use of power tools used in the building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6

10. Utilize stationary equipment in the building trades.
    a. Identify stationary equipment used in the building trades.
    b. Demonstrate the maintenance of stationary equipment used in the building trades.
    c. Demonstrate the safe use of stationary equipment used in the building trades.
    d. Demonstrate the use of computer equipment and software for blueprint reading and estimation in Building Trades.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6
11. Identify terms and demonstrate safety practices related to carpentry.
    a. Identify terms related to carpentry.
    b. Demonstrate safety practices related to carpentry.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8

    Workplace Skills (See Appendix B): WP2, WP6
12. Apply procedures to construct a project in carpentry.
    a. Select tools and materials for a specific building task in carpentry.
    b. Demonstrate procedures to use in storing materials.
    c. Perform foundation construction methods.
    d. Lay out, cut, and assemble floor and wall framing material.

    Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M4, M5, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
13. Explain terms, materials, and components related to electrical trades.
    a. Define terms related to electrical trades.
    b. Identify materials and electrical components.

    Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6, S8

    Workplace Skills (See Appendix B): WP2, WP6
14. Explain safety practices associated with electrical trades.
    a. Describe basic electrical safety practices.
    b. Describe hazards of electrical shock.
    c. Describe accident reporting procedures.
    d. Describe basic electric circuit safety methods.
    e. Describe the operation of current overload devices.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M4, M7, S5, S8

    Workplace Skills (See Appendix B): WP2, WP5, WP6
15. Perform electrical wiring installation.
    a. Select tools and materials for a specific task.
    b. Install wiring for 120-volt circuits.

c. Install boxes, cables, receptacles, and switches.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M4, M7, S6, S8

Workplace Skills (See Appendix B): WP1, WP3, WP4, WP5, WP6

16. Explain terms and rules for safety in masonry.
    a. Identify terms related to masonry trades.
    b. Describe rules for safety in masonry trades.

    Related Academic Topics (See Appendix A): C1, C3, C5, C6, S8

    Workplace Skills (See Appendix B): WP2, WP6
17. Apply procedures for masonry work.
    a. Select tools and materials for a specific task.
    b. Demonstrate the steps in manual mixing of mortar.
    c. Perform trowel spreading and buttering.
    d. Lay a four-inch brick lead.
    e. Lay a four-inch return corner lead.
    f. Lay out, set up batter boards, form, pour, and finish a reinforced concrete slab.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S6, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
18. 'dentify terms, materials, and components related to plumbing trades.
    a. Define terms related to plumbing trades.
    b. Identify materials and components related to plumbing trades.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8

    Workplace Skills (See Appendix B): WP2, WP6
19. Apply procedures in plumbing.
    a. Select tools and materials for a specific task.
    b. Measure, cut, ream, and thread steel pipe.
    c. Install a polyvinyl chloride (PVC) fitting on a PVC pipe.
    d. Cut, ream, and join copper tubing.
    e. Sweat copper fittings.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

CURRICULUM FRAMEWORK

Course Name: Building Trades II

Course CIP Code: 46.0491

Course Description: Building Trades II is a continuation of Building Trades I, and allows an individual to prepare for employment or continued education in the occupations of carpentry, electrical wiring, masonry, or plumbing. Included are units of study in Introduction and Orientation (Review); Safety (Review); Advanced Carpentry; Advanced Electrical Wiring; Advanced Masonry; and Advanced Plumbing. (2-2½ Carnegie Units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Explain the career opportunities associated with building trades.
   a. Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.
   b. Demonstrate personality traits to apply when serving the public.
   c. Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.
   d. Demonstrate desirable characteristics of the work ethic to apply in building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Describe vocational student organizations associated with building trades.
   a. Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Demonstrate job seeking skills to become employed in the building trades.
   a. Prepare a resume containing essential information.
   b. Complete a job application form.
   c. Describe procedures for a job interview.
   d. Demonstrate the role of an applicant in job interview.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
4. Explain personal and general safety rules for working in building trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.

e. Describe state eye safety law, including appropriate times for wearing safety glasses.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

5. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
6. Explain terms and safety related to carpentry.
   a. Identify terms related to carpentry.
   b. Demonstrate safety practices related to carpentry.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
7. Identify building components.
   a. Select materials for a certain job.
   b. Identify hardware for a specific job.
   c. Identify different styles of roofs.
   d. Identify parts of a roof frame.
   e. Identify parts of a simple roof truss.
   f. Identify the types of insulation.
   g. Identify the styles of interior wall finish.
   h. Identify types of interior trim.
   i. Identify types of cornices.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
8. Install building components.
   a. Lay out and install ceiling joists.
   b. Lay out, cut, and assemble parts of a gable roof frame.
   c. Install exterior sheeting.
   d. Build a box cornice.
   e. Install underlayment and asphalt shingles.
   f. Install a window unit.
   g. Install an exterior door unit.
   h. Install interior wall covering.
   i. Install blanket insulation in walls.
   j. Install different types of interior wall finish.

k. Install interior trim.
l. Install ceiling tile.
m. Install ăn interior door unit.
n. Install hardware.
o. Lay out stair stringer.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S5, S6, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

9. Explain terms and safety related to electrical trades.
   a. Define terms related to electrical trades.
   b. Describe basic electrical safety practices.
   c. Describe hazards of electrical shock.
   d. Describe accident reporting procedures.
   e. Describe the operation of current overload devices.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M4, M7, S5, S6, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
10. Identify components of electrical trades.
   a. Describe factors that determine the type and size of conductors.
   b. Identify types of cables used in electrical trades.
   c. Describe characteristics of a good connection.
   d. Identify locations which require ground fault control interrupt (GFCI) protection.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M4, M7, S5, S6, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
11. Install electrical wiring components.
   a. Install a simulated residential electrical system from the weatherhead to the service entrance panel, according to the National Electrical Code (NEC).
   b. Install simulated wiring circuits of 120 and 240 volts from the service entrance panel to the receptacles, switches, and load centers, according to the National Electrical Code (NEC).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M4, M6, M7, S5, S6, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
12. Explain terms and materials related to masonry trades.
   a. Define terms related to masonry trades.
   b. Demonstrate rules of safety in masonry trades.
   c. Perform safety and mechanical checks on a mechanical mixer.
   d. Identify characteristics of good bricklaying performance.

e. Identify types of brick.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M3, M4, M6, M7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

13. Perform procedures used in masonry trades.
    a. Measure, mark, and cut brick and block to specifications.
    b. Lay out a brick and/or block wall using the dry bond method.
    c. Mix a batch of mortar using a mechanical mixer.
    d. Lay up a wall between established leads.
    e. Construct brick and/or block piers.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M3, M4, M6, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
14. Explain terms and materials related to plumbing trades.
    a. Define terms related to plumbing.
    b. Demonstrate safety rules related to plumbing.
    c. Identify the duties of a plumber.
    d. Identify types of pipe used in plumbing.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M6, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
15. Join copper tubing.
    a. Select tools, materials, and equipment necessary to join copper tubing by the compression, flare, and sweat method.
    b. Join copper tubing by the compression, flare, and sweat method.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M4, M7, S5, S6, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
16. Join polyvinyl chloride (PVC) pipe.
    a. Select tools and materials used to join PVC pipe.
    b. Join PVC pipe and fittings.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
17. Join steel pipe.
    a. Identify sizes of steel pipe.
    b. Identify the tools and materials used to join steel pipe.
    c. Identify basic plumbing fittings, bends, valves, and branches.
    d. Measure, cut, ream, thread, and assemble steel pipe and fitting.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

18. Install water and drainage plumbing systems.
    a. Install water systems according to local codes.
    b. Install PVC-DWV (Drain-Waste-Vent) system according to local codes.
    c. Install plumbing fixtures.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M6, M7, S8

    Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

SECTION II:

CURRICULUM GUIDE

FOR

BUILDING TRADES

BUILDING TRADES I

22

BUILDING TRADES I
UNIT 1: INTRODUCTION AND ORIENTATION **(5 days)**

Competencies and Suggested Objectives:

1. Explain the career opportunities associated with building trades.
   a. Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.
   b. Demonstrate personality traits to apply when serving the public.
   c. Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.
   d. Demonstrate desirable characteristics of the work ethic to apply in building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Describe vocational student organizations associated with building trades.
   a. Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Demonstrate job seeking skills to become employed in the building trades.
   a. Prepare a resume containing essential information.
   b. Complete a job application form.
   c. Describe procedures for a job interview.
   d. Demonstrate the role of an applicant in job interview.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Explain the career opportunities associated with building trades.*
   a. Discussion and media regarding earnings, educational requirements, career ladder, and trade organizations associated with each trade.
   b. Discussion, media, and role play of personality traits to apply when serving the public.
   c. Discussion, media, and role play of desirable personality traits to apply when communicating with employees, supervisors, and other employees.
   d. Discussion, media, and role play of desirable characteristics of the work ethic to apply in building trades.

2. *Describe vocational student organizations associated with building trades.*
   a. *Assignment to identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.*
3. *Demonstrate job seeking skills to become employed in the building trades.*
   a. *Assist students to prepare a resume containing essential information.*
   b. *Assist students to complete a job application form.*
   c. *Discussion and media regarding procedures for a job interview.*
   d. *Discussion, media, and role play to demonstrate the role of an applicant in job interview.*

Suggested Assessment Strategies:

1. *Explain the career opportunities associated with building trades.*
   a. *Test - Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.*
   b. *Assignment - Demonstrate personality traits to apply when serving the public.*
   c. *Assignment - Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.*
   d. *Practical Exercise - Demonstrate desirable characteristics of the work ethic to apply in building trades.*
2. *Describe vocational student organizations associated with building trades.*
   a. *Oral/written assignment - Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.*
3. *Demonstrate job seeking skills to become employed in the building trades.*
   a. *Written assignment - Prepare a resume containing essential information.*
   b. *Written assignment - Complete a job application form.*
   c. *Oral assignment - Describe procedures for a job interview.*
   d. *Practical Exercise - Demonstrate the role of an applicant in job interview.*

Suggested References:

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Crockett, C., Stevens, S. & Stewart B. Core Employment Skills. Columbia, MO: Instructional Materials Laboratory, University of Missouri. 1990.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

VICA. Official Guide for VICA. Leesburg, VA: Vocational Industrial Clubs of America (VICA). (n.d.)

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES I
UNIT 2: SAFETY **(8 days)**

Competencies and Suggested Objectives:

1. Explain personal and general safety rules for working in building trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Describe state eye safety law, including appropriate times for wearing safety glasses.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Explain personal and general safety rules for working in building trades.*
   a. *Discussion and media on personal safety rules for working in a shop/lab and industry.*
   b. *Assist students to apply general workplace safety rules.*
   c. *Assist students to apply procedures for safely handling heavy objects.*
   d. *Demonstrate safety practices for using climbing devices.*
   e. *Discuss state eye safety law, including appropriate times for wearing safety glasses.*
2. *Apply workplace environmental safety procedures.*
   a. *Present demonstration on the safe use of fire extinguishers for different classes of fires.*
   b. *Assign a written and/or oral report to identify standard industry Safety Color Code.*
   c. *Discussion and media on factors to consider in storing and/or disposing of hazardous materials.*

d. *Assignment to identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
e. *Assignment to prepare a Materials Safety Data Sheet (MSDS).*

Suggested Assessment Strategies:

1. *Explain personal and general safety rules for working in building trades.*
   a. *Test – Demonstrate personal safety rules for working in a shop/lab and industry.*
   b. *Practical Exercise – Demonstrate general workplace safety rules.*
   c. *Practical Exercise – Demonstrate procedures for safely handling heavy objects.*
   d. *Practical Exercise – Demonstrate safety practices for using climbing devices.*
   e. *Test – Describe state eye safety law, including appropriate times for wearing safety glasses.*
2. *Apply workplace environmental safety procedures.*
   a. *Assignment – Describe the safe use of fire extinguishers for different classes of fires.*
   b. *Assignment – Identify standard industry Safety Color Code.*
   c. *Assignment – Describe factors to consider in storing and/or disposing of hazardous materials.*
   d. *Practical Exercise – Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
   e. *Practical Exercise – Review a Materials Safety Data Sheet (MSDS).*

Suggested References:

AAVIM. Developing Shop Safety Skills. Athens, GA: Author. 1981.

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

Warzecha, Mary. Hazardous Materials: Fingertip Retrieval System. Alexandria, VA: American Vocational Association. 1991.

BUILDING TRADES I
UNIT 3: CONSTRUCTION MATH, MEASUREMENT, AND BLUEPRINT READING **(15 days)**

Competencies and Suggested Objectives:

1. Apply measurement to the building trades.
   a. Identify measuring tools used in the building trades.
   b. Read measuring tools to 1/16th inch.
   c. Apply basic mathematics to building trades.
   Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Apply blueprint reading to the building trades.
   a. Identify terms and definitions used in reading blueprints and working drawings.
   b. Identify the basic components of a blueprint.
   c. Identify the lines used on blueprints.
   d. Prepare a building layout.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Apply measurement to the building trades.*
   a. *Practical Exercise – Identify measuring tools used in the building trades.*
   b. *Practical Exercise – Read measuring tools to 1/16th inch.*
   c. *Assist students to apply basic mathematics to building trades.*
2. *Apply blueprint reading to the building trades.*
   a. *Discussion and media to identify terms and definitions used in reading blueprints and working drawings.*
   b. *Assist students to identify the basic components of a blueprint.*
   c. *Assist students to identify the lines used on blueprints.*
   d. *Practical Exercise – Prepare a building layout.*

Suggested Assessment Strategies:

1. *Apply measurement to the building trades.*
   a. *Test – Identify measuring tools used in the building trades.*
   b. *Practical Activity – Read measuring tools to 1/16th inch.*
   c. *Practical Activity – Apply basic mathematics to building trades.*

2. *Apply blueprint reading to the building trades.*
   a. *Test – Identify terms and definitions used in reading blueprints and working drawings.*
   b. *Test – Identify the basic components of a blueprint.*
   c. *Practical Activity – Identify the lines used on blueprints.*
   d. *Practical Activity --Prepare a building layout.*

Suggested References:

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Brown, W. C. Blueprint Reading for Construction. South Holland, IL: Goodheart-Willcox. 1990.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES I
UNIT 4: HAND TOOLS, POWER TOOLS, AND STATIONARY EQUIPMENT (7 days)

Competencies and Suggested Objectives:

1. Utilize hand tools in the building trades.
   a. Identify hand tools used in the building trades.
   b. Demonstrate the maintenance of hand tools used in the building trades.
   c. Demonstrate the safe use of hand tools used in the building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S7, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6
2. Utilize power tools in the building trades.
   a. Identify power tools used in the building trades.
   b. Demonstrate the maintenance of power tools used in the building trades.
   c. Demonstrate the safe use of power tools used in the building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6
3. Utilize stationary equipment in the building trades.
   a. Identify stationary equipment used in the building trades.
   b. Demonstrate the maintenance of stationary equipment used in the building trades.
   c. Demonstrate the safe use of stationary equipment used in the building trades.
   d. Demonstrate the use of computer equipment and software for blueprint reading and estimation in Building Trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S7, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Utilize hand tools in the building trades.*
   a. *Practical exercise to identify hand tools used in the building trades.*
   b. *Practical exercise to demonstrate the maintenance of hand tools used in the building trades.*
   c. *Practical exercise to demonstrate the safe use of hand tools used in the building trades.*
2. *Utilize power tools in the building trades.*
   a. *Practical exercise to identify power tools used in the building trades.*
   b. *Practical exercise to demonstrate the maintenance of power tools used in the building trades.*

   c. *Practical exercise to demonstrate the safe use of power tools used in the building trades.*
3. *Utilize stationary equipment in the building trades.*
   a. *Practical exercise to identify stationary equipment used in the building trades.*
   b. *Practical exercise to demonstrate the maintenance of stationary equipment used in the building trades.*
   c. *Practical exercise to demonstrate the safe use of stationary used in the building trades.*
   d. *Performance exercise to demonstrate the use of computer equipment and software for blueprint reading and estimation in Building Trades.*

Suggested Assessment Strategies:

1. *Utilize hand tools in the building trades.*
   a. *Practical Activity – Identify hand tools used in the building trades.*
   b. *Practical Activity – Demonstrate the maintenance of hand tools used in the building trades.*
   c. *Practical Activity – Demonstrate the safe use of hand tools used in the building trades.*
2. *Utilize power tools in the building trades.*
   a. *Practical Activity – Identify power tools used in the building trades.*
   b. *Practical Activity – Demonstrate the maintenance of power tools used in the building trades.*
   c. *Practical Activity – Demonstrate the safe use of power tools used in the building trades.*
3. *Utilize stationary equipment in the building trades.*
   a. *Practical Activity – Identify stationary equipment used in the building trades.*
   b. *Practical Activity – Demonstrate the maintenance of stationary equipment used in the building trades.*
   c. *Practical Activity – Demonstrate the safe use of stationary equipment used in the building trades.*
   d. *Performance Activity – Demonstrate the use of computer equipment and software for blueprint reading and estimation in Building Trades.*

Suggested References:

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Feirer, J. L.,, Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES I
UNIT 5: INTRODUCTION TO CARPENTRY **(25 days)**

Competencies and Suggested Objectives:

1. Identify terms and demonstrate safety practices related to carpentry.
   a. Identify terms related to carpentry.
   b. Demonstrate safety practices related to carpentry.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Apply procedures to construct a project in carpentry.
   a. Select tools and materials for a specific building task in carpentry.
   b. Demonstrate procedures to use in storing materials.
   c. Perform foundation construction methods.
   d. Lay out, cut, and assemble floor and wall framing material.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify terms and demonstrate safety practices related to carpentry.*
   a. Discussion and media to identify terms related to carpentry.
   b. Practical exercise to demonstrate safety practices related to carpentry.
2. *Apply procedures to construct a project in carpentry.*
   a. Practical exercise to select tools and materials for a specific building task in carpentry.
   b. Practical exercise to demonstrate procedures to use in storing materials.
   c. Practical exercise to perform foundation construction methods.
   d. Practical exercise to lay out, cut, and assemble floor and wall framing material.

Suggested Assessment Strategies:

1. *Identify terms and demonstrate safety practices related to carpentry.*
   a. Test – Identify terms related to carpentry.
   b. Practical Activity – Demonstrate safety practices related to carpentry.
2. *Apply procedures to construct a project in carpentry.*
   a. Practical Activity – Select tools and materials for a specific building task in carpentry.
   b. Practical Activity – Demonstrate procedures to use in storing materials.

c. *Practical Activity – Perform foundation construction methods.*
d. *Practical Activity – Lay out, cut, and assemble floor and wall framing material.*

Suggested References:

AAVIM. Floor Framing. Athens, GA: American Association for Vocational Instruction Materials. 1988.

AAVIM. Wall Framing. Athens, GA: American Association for Vocational Instruction Materials. 1989.

AAVIM. Ceiling Framing. Athens, GA: American Association for Vocational Instruction Materials. 1990.

AAVIM. Roof Framing. Athens, GA: American Association for Vocational Instruction Materials. 1991.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction, (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES I
UNIT 6: INTRODUCTION TO ELECTRICAL WIRING **(25 days)**

Competencies and Suggested Objectives:

1. Explain terms, materials, and components related to electrical trades.
   a. Define terms related to electrical trades.
   b. Identify materials and electrical components.
   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Explain safety practices associated with electrical trades.
   a. Describe basic electrical safety practices.
   b. Describe hazards of electrical shock.
   c. Describe accident reporting procedures.
   d. Describe basic electric circuit safety methods.
   e. Describe the operation of current overload devices.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M4, M7, S5, S8
   Workplace Skills (See Appendix B): WP2, WP5, WP6
3. Perform electrical wiring installation.
   a. Select tools and materials for a specific task.
   b. Install wiring for 120-volt circuits.
   c. Install boxes, cables, receptacles, and switches.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M4, M7, S6, S8
   Workplace Skills (See Appendix B): WP1, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Explain terms, materials, and components related to electrical trades.*
   a. Practical exercise to define terms related to electrical trades.
   b. Practical exercise to identify materials and electrical components.
2. *Explain safety practices associated with electrical trades.*
   a. Discussion and media to describe basic electrical safety practices.
   b. Discussion and media to describe hazards of electrical shock.
   c. Discussion and media to describe accident reporting procedures.
   d. Discussion and media to describe basic electric circuit safety methods.
   e. Discussion and media to describe the operation of current overload devices.
3. *Perform electrical wiring installation.*
   a. Practical exercise to select tools and materials for a specific task.
   b. Practical exercise to install wiring for 120-volt circuits.
   c. Practical exercise to install boxes, cables, receptacles, and switches.

Suggested Assessment Strategies:

1. *Explain terms, materials, and components related to electrical trades.*
   a. *Test – Define terms related to electrical trades.*
   b. *Practical Activity – Identify materials and electrical components.*
2. *Explain safety practices associated with electrical trades.*
   a. *Test – Describe basic electrical safety practices.*
   b. *Test – Describe hazards of electrical shock.*
   c. *Test – Describe accident reporting procedures.*
   d. *Test – Describe basic electric circuit safety methods.*
   e. *Test – Describe the operation of current overload devices.*
3. *Perform electrical wiring installation.*
   a. *Practical Activity – Select tools and materials for a specific task.*
   b. *Practical Activity – Install wiring for 120-volt circuits.*
   c. *Practical Activity – Install boxes, cables, receptacles, and switches.*

Suggested References:

AAVIM. Electrical Wiring. Athens, GA: American Association of Vocational Instructional Materials. 1991.

Mix, F. M. House Wiring Simplified. South Holland, IL: Goodheart-Willcox. 1991.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

BUILDING TRADES I
UNIT 7: INTRODUCTION TO MASONRY **(25 days)**

Competencies and Suggested Objectives:

1. Explain terms and rules for safety in masonry.
   a. Identify terms related to masonry trades.
   b. Describe rules for safety in masonry trades.
   Related Academic Topics (See Appendix A): C1, C3, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Apply procedures for masonry work.
   a. Select tools and materials for a specific task.
   b. Demonstrate the steps in manual mixing of mortar.
   c. Perform trowel spreading and buttering.
   d. Lay a four-inch brick lead.
   e. Lay a four-inch return corner lead.
   f. Lay out, set up batter boards, form, pour, and finish a reinforced concrete slab.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S6, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Explain terms and rules for safety in masonry.*
   a. *Discussion and media to identify terms related to masonry trades.*
   b. *Discussion and media to describe rules for safety in masonry trades.*
2. *Apply procedures for masonry work.*
   a. *Practical exercise to select tools and materials for a specific task.*
   b. *Practical exercise to demonstrate the steps in manual mixing of mortar.*
   c. *Practical exercise to perform trowel spreading and buttering.*
   d. *Practical exercise to lay a four-inch brick lead.*
   e. *Practical exercise to lay a four-inch return corner lead.*
   f. *Practical exercise to lay out, set up batter boards, form, pour, and finish a reinforced concrete slab.*

Suggested Assessment Strategies:

1. *Explain terms and rules for safety in masonry.*
   a. *Test – Identify terms related to masonry trades.*
   b. *Test – Describe rules for safety in masonry trades.*
2. *Apply procedures for masonry work.*
   a. *Practical Activity – Select tools and materials for a specific task.*

b. *Practical Activity – Demonstrate the steps in manual mixing of mortar.*
c. *Perform trowel spreading and buttering.*
d. *Practical Activity – Lay a four-inch brick lead.*
e. *Practical Activity – Lay a four-inch return corner lead.*
f. *Practical Activity – Lay out, set up batter boards, form, pour, and finish a reinforced concrete slab.*

Suggested References:

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES I
UNIT 8: INTRODUCTION TO PLUMBING (25 days)

Competencies and Suggested Objectives:

1. Identify terms, materials, and components related to plumbing trades.
   a. Define terms related to plumbing trades.
   b. Identify materials and components related to plumbing trades.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Apply procedures in plumbing.
   a. Select tools and materials for a specific task.
   b. Measure, cut, ream, and thread steel pipe.
   c. Install a polyvinyl chloride (PVC) fitting on a PVC pipe.
   d. Cut, ream, and join copper tubing.
   e. Sweat copper fittings.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify terms, materials, and components related to plumbing trades.*
   a. Discussion and media to define terms related to plumbing trades.
   b. Practical Exercise – Identify materials and components related to plumbing trades.
2. *Apply procedures in plumbing.*
   a. Practical Exercise – Select tools and materials for a specific task.
   b. Practical Exercise – Measure, cut, ream, and thread steel pipe.
   c. Practical Exercise – Install a polyvinyl chloride (PVC) fitting on a PVC pipe.
   d. Practical Exercise – Cut, ream, and join copper tubing.
   e. Practical Exercise – Sweat copper fittings.

Suggested Assessment Strategies:

1. *Identify terms, materials, and components related to plumbing trades.*
   a. Test – Define terms related to plumbing trades.
   b. Practical Activity – Identify materials and components related to plumbing trades.
2. *Apply procedures in plumbing.*
   a. Practical Activity – Select tools and materials for a specific task.
   b. Practical Activity – Measure, cut, ream, and thread steel pipe.
   c. Practical Activity – Install a polyvinyl chloride (PVC) fitting on a PVC pipe.

d. Practical Activity – Cut, ream, and join copper tubing.
e. Practical Activity – Sweat copper fittings.

Suggested References:

AAVIM. Basic Plumbing Skills. Athens, GA: American Association of Vocational Instructional Materials. 1989.

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

BUILDING TRADES II

BUILDING TRADES II
UNIT 1: INTRODUCTION AND ORIENTATION (REVIEW) **(2 days)**

Competencies and Suggested Objectives:

1. Explain the career opportunities associated with building trades.
   a. Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.
   b. Demonstrate personality traits to apply when serving the public.
   c. Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.
   d. Demonstrate desirable characteristics of the work ethic to apply in building trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Describe vocational student organizations associated with building trades.
   a. Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Demonstrate job seeking skills to become employed in the building trades.
   a. Prepare a resume containing essential information.
   b. Complete a job application form.
   c. Describe procedures for a job interview.
   d. Demonstrate the role of an applicant in job interview.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Explain the career opportunities associated with building trades.*
   a. Discussion and media regarding earnings, educational requirements, career ladder, and trade organizations associated with each trade.
   b. Discussion, media, and role play of personality traits to apply when serving the public.
   c. Discussion, media, and role play of desirable personality traits to apply when communicating with employees, supervisors, and other employees.
   d. Discussion, media, and role play of desirable characteristics of the work ethic to apply in building trades.

2. *Describe vocational student organizations associated with building trades.*
   a. *Assignment to identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.*
3. *Demonstrate job seeking skills to become employed in the building trades.*
   a. *Assist students to prepare a resume containing essential information.*
   b. *Assist students to complete a job application form.*
   c. *Discussion and media regarding procedures for a job interview.*
   d. *Discussion, media, and role play to demonstrate the role of an applicant in job interview.*

Suggested Assessment Strategies:

1. *Explain the career opportunities associated with building trades.*
   a. *Test – Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.*
   b. *Assignment – Demonstrate personality traits to apply when serving the public.*
   c. *Assignment – Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.*
   d. *Practical Exercise – Demonstrate desirable characteristics of the work ethic to apply in building trades.*
2. *Describe vocational student organizations associated with building trades.*
   a. *Oral/written assignment – Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.*
3. *Demonstrate job seeking skills to become employed in the building trades.*
   a. *Written assignment – Prepare a resume containing essential information.*
   b. *Written assignment – Complete a job application form.*
   c. *Oral assignment – Describe procedures for a job interview.*
   d. *Practical Exercise – Demonstrate the role of an applicant in job interview.*

Suggested References:

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Crockett, C., Stevens, S. & Stewart B. Core Employment Skills. Columbia, MO: Instructional Materials Laboratory, University of Missouri. 1990.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

VICA. Official Guide for VICA. Leesburg, VA: Vocational Industrial Clubs of America (VICA). (n.d.)

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES II
UNIT 2: SAFETY (REVIEW) **(5 days)**

Competencies and Suggested Objectives:

1. Explain personal and general safety rules for working in building trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Describe state eye safety law, including appropriate times for wearing safety glasses.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Explain personal and general safety rules for working in building trades.*
   a. Discussion and media on personal safety rules for working in a shop/lab and industry.
   b. Assist students to apply general workplace safety rules.
   c. Assist students to apply procedures for safely handling heavy objects.
   d. Practical exercise to demonstrate safety practices for using climbing devices.
   e. Discuss state eye safety law, including appropriate times for wearing safety glasses.
2. *Apply workplace environmental safety procedures.*
   a. Present demonstration on the safe use of fire extinguishers for different classes of fires.
   b. Written and/or oral report to identify standard industry Safety Color Code.
   c. Discussion and media on factors to consider in storing and/or disposing of hazardous materials.

d. *Assignment to identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
e. *Assignment to prepare a Materials Safety Data Sheet (MSDS).*

Suggested Assessment Strategies:

1. *Explain personal and general safety rules for working in building trades.*
   a. *Test – Demonstrate personal safety rules for working in a shop/lab and industry.*
   b. *Practical Exercise – Demonstrate general workplace safety rules.*
   c. *Practical Exercise – Demonstrate procedures for safely handling heavy objects.*
   d. *Practical Exercise – Demonstrate safety practices for using climbing devices.*
   e. *Test – Describe state eye safety law, including appropriate times for wearing safety glasses.*
2. *Apply workplace environmental safety procedures.*
   a. *Assignment – Describe the safe use of fire extinguishers for different classes of fires.*
   b. *Assignment – Identify standard industry Safety Color Code.*
   c. *Assignment – Describe factors to consider in storing and/or disposing of hazardous materials.*
   d. *Practical Exercise – Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
   e. *Practical Exercise -Review a Materials Safety Data Sheet (MSDS).*

Suggested References:

AAVIM. Developing Shop Safety Skills. Athens, GA: Author. 1981.

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1993.

Kicklighter, C. E. Modern Masonry. South Holland, IL: Goodheart-Willcox. 1991.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

Warzecha, Mary. Hazardous Materials: Fingertip Retrieval System. Alexandria, VA: American Vocational Association. 1991.

BUILDING TRADES II
UNIT 3: ADVANCED CARPENTRY **(32 days)**

Competencies and Suggested Objectives:

1. Explain terms and safety related to carpentry.
   a. Identify terms related to carpentry.
   b. Demonstrate safety practices related to carpentry.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Identify building components.
   a. Select materials for a certain job.
   b. Identify hardware for a specific job.
   c. Identify different styles of roofs.
   d. Identify parts of a roof frame.
   e. Identify parts of a simple roof truss.
   f. Identify the types of insulation.
   g. Identify the styles of interior wall finish.
   h. Identify types of interior trim.
   i. Identify types of cornices.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
3. Install building components.
   a. Lay out and install ceiling joists.
   b. Lay out, cut, and assemble parts of a gable roof frame.
   c. Install exterior sheeting.
   d. Build a box cornice.
   e. Install underlayment and asphalt shingles.
   f. Install a window unit.
   g. Install an exterior door unit.
   h. Install interior wall covering.
   i. Install blanket insulation in walls.
   j. Install different types of interior wall finish.
   k. Install interior trim.
   l. Install ceiling tile.
   m. Install an interior door unit.
   n. Install hardware.
   o. Lay out stair stringer.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S5, S6, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Explain terms and safety related to carpentry.*
   a. *Discussion and media to identify terms related to carpentry.*
   b. *Discussion and media to demonstrate safety practices related to carpentry.*
2. *Identify building components.*
   a. *Practical exercise to select materials for a certain job.*
   b. *Practical exercise to identify hardware for a specific job.*
   c. *Practical exercise to identify different styles of roofs.*
   d. *Practical exercise to identify parts of a roof frame.*
   e. *Practical exercise to identify parts of a simple roof truss.*
   f. *Practical exercise to identify the types of insulation.*
   g. *Practical exercise to identify the styles of interior wall finish.*
   h. *Practical exercise to identify types of interior trim.*
   i. *Practical exercise to identify types of cornices.*
3. *Install building components.*
   a. *Practical exercise to lay out and install ceiling joists.*
   b. *Practical exercise to lay out, cut, and assemble parts of a gable roof frame.*
   c. *Practical exercise to install exterior sheeting.*
   d. *Practical exercise to build a box cornice.*
   e. *Practical exercise to install underlayment and asphalt shingles.*
   f. *Practical exercise to install a window unit.*
   g. *Practical exercise to install an exterior door unit.*
   h. *Practical exercise to install interior wall covering.*
   i. *Practical exercise to install blanket insulation in walls.*
   j. *Practical exercise to install different types of interior wall finish.*
   k. *Practical exercise to install interior trim.*
   l. *Practical exercise to install ceiling tile.*
   m. *Practical exercise to install an interior door unit.*
   n. *Practical exercise to install hardware.*
   o. *Practical exercise to lay out stair stringer.*

Suggested Assessment Strategies:

1. *Explain terms and safety related to carpentry.*
   a. *Test – Identify terms related to carpentry.*
   b. *Test – Demonstrate safety practices related to carpentry.*
2. *Identify building components.*
   a. *Practical Activity – Select materials for a certain job.*
   b. *Practical Activity – Identify hardware for a specific job.*
   c. *Practical Activity – Identify different styles of roofs.*
   d. *Practical Activity – Identify parts of a roof frame.*

e. Practical Activity – Identify parts of a simple roof truss.
f. Practical Activity – Identify the types of insulation.
g. Practical Activity – Identify the styles of interior wall finish.
h. Practical Activity – Identify types of interior trim.
i. Practical Activity – Identify types of cornices.

3. Install building components.
a. Practical Activity – Lay out and install ceiling joists.
b. Practical Activity – Lay out, cut, and assemble parts of a gable roof frame.
c. Practical Activity – Install exterior sheeting.
d. Practical Activity – Build a box cornice.
e. Practical Activity – Install underlayment and asphalt shingles.
f. Practical Activity – Install a window unit.
g. Practical Activity – Install an exterior door unit.
h. Practical Activity – Install interior wall covering.
i. Practical Activity – Install blanket insulation in walls.
j. Practical Activity – Install different types of interior wall finish.
k. Practical Activity – Install interior trim.
l. Practical Activity – Install ceiling tile.
m. Practical Activity – Install an interior door unit.
n. Practical Activity – Install hardware.
o. Practical Activity – Lay out stair stringer.

Suggested References:

AAVIM. Floor Framing. Athens, GA: American Association for Vocational Instruction Materials. 1988.

AAVIM. Wall Framing. Athens, GA: American Association for Vocational Instruction Materials. 1989.

AAVIM. Ceiling Framing. Athens, GA: American Association for Vocational Instruction Materials. 1990.

AAVIM. Roof Framing. Athens, GA: American Association for Vocational Instruction Materials. 1991.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES II
UNIT 4: ADVANCED ELECTRICAL WIRING **(32 days)**

Competencies and Suggested Objectives:

1. Explain terms and safety related to electrical trades.
   a. Define terms related to electrical trades.
   b. Describe basic electrical safety practices.
   c. Describe hazards of electrical shock.
   d. Describe accident reporting procedures.
   e. Describe the operation of current overload devices.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M4, M7, S5, S6, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
2. Identify components of electrical trades.
   a. Describe factors that determine the type and size of conductors.
   b. Identify types of cables used in electrical trades.
   c. Describe characteristics of a good connection.
   d. Identify locations which require ground fault control interrupt (GFCI) protection.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M4, M7, S5, S6, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
3. Install electrical wiring components.
   a. Install a simulated residential electrical system from the weatherhead to the service entrance panel, according to the National Electrical Code (NEC).
   b. Install simulated wiring circuits of 120 and 240 volts from the service entrance panel to the receptacles, switches, and load centers, according to the National Electrical Code (NEC).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M4, M6, M7, S5, S6, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. Explain terms and safety related to electrical trades.
   a. Discussion and media to define terms related to electrical trades.
   b. Discussion and media to describe basic electrical safety practices.
   c. Discussion and media to describe hazards of electrical shock.
   d. Discussion and media to describe accident reporting procedures.
   e. Discussion and media to describe the operation of current overload devices.

2. *Identify components of electrical trades.*
   a. *Assist students to describe factors that determine the type and size of conductors.*
   b. *Assist students to identify types of cables used in electrical trades.*
   c. *Assist students to describe characteristics of a good connection.*
   d. *Practical exercise to identify locations which require ground fault control interrupt (GFCI) protection.*
3. *Install electrical wiring components.*
   a. *Practical exercise to install a simulated residential electrical system from the weatherhead to the service entrance panel, according to the National Electrical Code (NEC).*
   b. *Practical exercise to install simulated wiring circuits of 120 and 240 volts from the service entrance panel to the receptacles, switches, and load centers, according to the National Electrical Code (NEC).*

Suggested Assessment Strategies:

1. *Explain terms and safety related to electrical trades.*
   a. *Test – Define terms related to electrical trades.*
   b. *Test – Describe basic electrical safety practices.*
   c. *Test – Describe hazards of electrical shock.*
   d. *Test – Describe accident reporting procedures.*
   e. *Test – Describe the operation of current overload devices.*
2. *Identify components of electrical trades.*
   a. *Oral/written Report – Describe factors that determine the type and size of conductors.*
   b. *Practical Activity – Identify types of cables used in electrical trades.*
   c. *Oral/written Report – Describe characteristics of a good connection.*
   d. *Practical Activity – Identify locations which require ground fault control interrupt (GFCI) protection.*
3. *Install electrical wiring components.*
   a. *Practical Activity – Install a simulated residential electrical system from the weatherhead to the service entrance panel, according to the National Electrical Code (NEC).*
   b. *Practical Activity – Install simulated wiring circuits of 120 and 240 volts from the service entrance panel to the receptacles, switches, and load centers, according to the National Electrical Code (NEC).*

Suggested References:

AAVIM. Electrical Wiring. Athens, GA: American Association of Vocational Instructional Materials. 1991.

Holtzman, H. N. Modern Residential Wiring. South Holland, IL: Goodheart-Willcox. 1991.

Mix, F. M. House Wiring Simplified. South Holland, IL: Goodheart-Willcox.

National Fire Protection Association. National Electrical Code. Batterymarch Park, MA: Author. 1995.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

BUILDING TRADES II
UNIT 5: ADVANCED MASONRY (32 days)

Competencies and Suggested Objectives:

1. Explain terms and materials related to masonry trades.
   a. Define terms related to masonry trades.
   b. Demonstrate rules of safety in masonry trades.
   c. Perform safety and mechanical checks on a mechanical mixer.
   d. Identify characteristics of good bricklaying performance.
   e. Identify types of brick.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M3, M4, M6, M7, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
2. Perform procedures used in masonry trades.
   a. Measure, mark, and cut brick and block to specifications.
   b. Lay out a brick and/or block wall using the dry bond method.
   c. Mix a batch of mortar using a mechanical mixer.
   d. Lay up a wall between established leads.
   e. Construct brick and/or block piers.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M3, M4, M6, M7, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Explain terms and materials related to masonry trades.*
   a. Discussion and media to define terms related to masonry trades.
   b. Discussion and media to demonstrate rules of safety in masonry trades.
   c. Practical exercise to perform safety and mechanical checks on a mechanical mixer.
   d. Oral/written assignment to identify characteristics of good bricklaying performance.
   e. Practical exercise to identify types of brick.
2. *Perform procedures used in masonry trades.*
   a. Practical exercise to measure, mark, and cut brick and block to specifications.
   b. Practical exercise to lay out a brick and/or block wall using the dry bond method.
   c. Practical exercise to mix a batch of mortar using a mechanical mixer.
   d. Practical exercise to lay up a wall between established leads.
   e. Practical exercise to construct brick and/or block piers.

Suggested Assessment Strategies:

1. *Explain terms and materials related to masonry trades.*
   a. *Test – Define terms related to masonry trades.*
   b. *Test – Demonstrate rules of safety in masonry trades.*
   c. *Practical Activity – Perform safety and mechanical checks on a mechanical mixer.*
   d. *Oral/written Report – Identify characteristics of good bricklaying performance.*
   e. *Practical Activity – Identify types of brick.*
2. *Perform procedures used in masonry trades.*
   a. *Practical Activity – Measure, mark, and cut brick and block to specifications.*
   b. *Practical Activity – Lay out a brick and/or block wall using the dry bond method.*
   c. *Practical Activity – Mix a batch of mortar using a mechanical mixer.*
   d. *Practical Activity – Lay up a wall between established leads.*
   e. *Practical Activity – Construct brick and/or block piers.*

Suggested References:

Kicklighter, C. E. Modern Masonry. Holland, IL: Goodheart-Willcox. 1991.

Feirer, J. L., Hutchings, G. R. & Feirer, M. D. Carpentry and Building Construction (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

BUILDING TRADES II
UNIT 6: ADVANCED PLUMBING **(32 days)**

Competencies and Suggested Objectives:

1. Explain terms and materials related to plumbing trades.
   a. Define terms related to plumbing.
   b. Demonstrate safety rules related to plumbing.
   c. Identify the duties of a plumber.
   d. Identify types of pipe used in plumbing.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M6, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
2. Join copper tubing.
   a. Select tools, materials, and equipment necessary to join copper tubing by the compression, flare, and sweat method.
   b. Join copper tubing by the compression, flare, and sweat method.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M4, M7, S5, S6, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
3. Join polyvinyl chloride (PVC) pipe.
   a. Select tools and materials used to join PVC pipe.
   b. Join PVC pipe and fittings.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
4. Join steel pipe.
   a. Identify sizes of steel pipe.
   b. Identify the tools and materials used to join steel pipe.
   c. Identify basic plumbing fittings, bends, valves, and branches.
   d. Measure, cut, ream, thread, and assemble steel pipe and fitting.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
5. Install water and drainage plumbing systems.
   a. Install water systems according to local codes.
   b. Install PVC-DWV (Drain-Waste-Vent) system according to local codes.
   c. Install plumbing fixtures.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, M6, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Explain terms and materials related to plumbing trades.*
   a. *Discussion and media to define terms related to plumbing.*
   b. *Discussion and media to demonstrate safety rules related to plumbing.*
   c. *Oral/written Assignment – Identify the duties of a plumber.*
   d. *Practical Exercise – Identify types of pipe used in plumbing.*
2. *Join copper tubing.*
   a. *Practical Exercise – Select tools, materials, and equipment necessary to join copper tubing by the compression, flare, and sweat method.*
   b. *Practical Exercise – Join copper tubing by the compression, flare, and sweat method.*
3. *Join polyvinyl chloride (PVC) pipe.*
   a. *Practical Exercise – Select tools and materials used to join PVC pipe.*
   b. *Practical Exercise to join PVC pipe and fittings.*
4. *Join steel pipe.*
   a. *Practical Exercise – Identify sizes of steel pipe.*
   b. *Practical Exercise – Identify the tools and materials used to join steel pipe.*
   c. *Practical Exercise – Identify basic plumbing fittings, bends, valves, and branches.*
   d. *Practical Exercise – Measure, cut, ream, thread, and assemble steel pipe and fitting.*
5. *Install water and drainage plumbing systems.*
   a. *Practical Exercise – Install water systems according to local codes.*
   b. *Practical Exercise – Install PVC-DWV (Drain-Waste-Vent) system according to local codes.*
   c. *Practical Exercise – Install plumbing fixtures.*

Suggested Assessment Strategies:

1. *Explain terms and materials related to plumbing trades.*
   a. *Test – Define terms related to plumbing.*
   b. *Practical Activity – Demonstrate safety rules related to plumbing.*
   c. *Oral/written Report – Identify the duties of a plumber.*
   d. *Practical Activity – Identify types of pipe used in plumbing.*
2. *Join copper tubing.*
   a. *Practical Activity – Select tools, materials, and equipment necessary to join copper tubing by the compression, flare, and sweat method.*
   b. *Practical Activity – Join copper tubing by the compression, flare, and sweat method.*
3. *Join polyvinyl chloride (PVC) pipe.*
   a. *Practical Activity – Select tools and materials used to join PVC pipe.*
   b. *Practical Activity – Join PVC pipe and fittings.*

4. *Join steel pipe.*
   a. *Practical Activity – Identify sizes of steel pipe.*
   b. *Practical Activity – Identify the tools and materials used to join steel pipe.*
   c. *Practical Activity – Identify basic plumbing fittings, bends, valves, and branches.*
   d. *Practical Activity – Measure, cut, ream, thread, and assemble steel pipe and fitting.*
5. *Install water and drainage plumbing systems.*
   a. *Practical Activity – Install water systems according to local codes.*
   b. *Practical Activity – Install PVC-DWV (Drain-Waste-Vent) system according to local codes.*
   c. *Practical Activity – Install plumbing fixtures.*

Suggested References:

AAVIM. Basic Plumbing Skills. Athens, GA: American Association of Vocational Instructional Materials. 1989.

Blankenbaker, E. K. Modern Plumbing. South Holland, IL: Goodheart-Willcox. 1992.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

SECTION III:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR BUILDING TRADES
(for class size of 20)

1. Air compressor (1)
2. Awl, scratch (2)
3. Bar, ripping (2)
4. Bender, copper tubing (1)
5. Bender, conduit (½"-3/4") (1)
6. Bin, revolving (1)
7. Bit set, auger (¼"-1") (2)
8. Bit, expansion (2)
9. Box, mortar (15 cu. ft.) (1)
10. Brace, wood hand (4)
11. Brush, masonry (6)
12. C-clamp, vise grip (4)
13. C-clamp, assorted sizes (4)
14. Cabinet, flammable materials (1)
15. Chalkline (2)
16. Chisel, ripping (1)
17. Chisel set, wood (¼"-1½") (2)
18. Chisel set, cold (¼"-1") (1)
19. Clamp, bar (4)
20. Computer w/operating software w/multimedia kit (1 per program)
21. Cutter, bolt (1)
22. Cutter, PVC pipe (2)
23. Cutter, cable (2') (1)
24. Cutter, pipe (1)
25. Cutter, copper tubing (2)
26. Darby (1)
27. Die set, threader ratchet type (⅜"-2") (1)
28. Dividers, wing (1)
29. Drill, portable (½") (1)
30. Drill press, (14" w/vise) (1)
31. Drill set, spade (¼"-1½") (1)
32. Drill set, twist (1/16"-½") (1)
33. Drill, portable (½", right angle) (1)
34. Drill, portable (⅜") (1)
35. Dust collection system for shop (1)
36. Edger, cement (2)
37. Extension cord, (25' 12/3 conductor) (6)
38. Extinguisher, fire (ABC) (2)
39. Eye protection and sterilization chest (w/20 pr. safety glasses) (1)
40. File, metal double-cut (3)

41. File, wood (flat, assorted sizes) (6)
42. File, wood rasp (half-round) (1)
43. Flaring tool, copper tubing (2)
44. Float, rubber (2)
45. Grinder, pedestal (1)
46. Groover, cement(2)
47. Hacksaw (5)
48. Half hatchet (1)
49. Hammer, straight claw (6)
50. Hammer, sledge (3)
51. Hammer, ball peen (2)
52. Hammer, brick (4)
53. Hammer, curved claw (16 oz.) (6)
54. Handsaw, rip (4)
55. Handsaw, crosscut (8)
56. Hawk, plastering (2)
57. Hoe, mortar (2)
58. Hose, water (50') (2)
59. Hose, air (50') (2)
60. Joiner, sled block (6)
61. Jointer, rake bricklaying (6)
62. Jointer, concave bricklaying (6)
63. Knife, putty (4") (2)
64. Knife, putty (6") (2)
65. Knife, putty (2") (2)
66. Knife, utility (2)
67. Ladder, extension (32') (1)
68. Ladder, step (4') (1)
69. Ladder, step (6') (1)
70. Ladder, step (8') (1)
71. Level, transit w/tripod and leveling rod (1)
72. Level, carpenter's aluminum (48") (2)
73. Level, carpenter's aluminum (24") (2)
74. Level, masonry (48") (8)
75. Light, electrical circuit tester (120V and 240V) (6)
76. Mallet, wood (2)
77. Mallet, rubber (1)
78. Mixer, cement, gas or electric powered (1)
79. Nailer, pneumatic (1)
80. Plane, jack (2)
81. Plane, block (2)
82. Pliers, channel lock (12") (2)
83. Pliers, diagonal (6)
84. Pliers, lineman's (side cutters) (8)

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85. Pliers, needlenose (8)
86. Pliers, joint (6)
87. Pliers, vise grip (2)
88. Plumb bob (2)
89. Pouch, electrician's tool (6)
90. Printer, dot matrix (1 per program)
91. Reamer, pipe (1)
92. Ripper, cable (6)
93. Router, w/bits (1)
94. Rule, folding (6') (6)
95. Rule, folding (6' modular) (6)
96. Safety kit (OSHA approved) (1)
97. Sander, belt (1)
98. Sander, finish (1)
99. Sander, portable finishing (1)
100. Saw, back (2)
101. Saw, circular (7½" portable) (3)
102. Saw, coping (2)
103. Saw, motorized miter (1)
104. Saw, keyhole (2)
105. Saw, saber (1)
106. Saw, masonry (14" w/blade) (1)
107. Saw, radial arm (1)
108. Saw, table (1)
109. Saw, reciprocating (1)
110. Saw, band (14") (1)
111. Scaffold kit (1)
112. Screwdriver set (Phillips, assorted sizes) (10)
113. Screwdriver set (spiral w/bits) (2)
114. Screwdriver set (flat blade, assorted sizes) (10)
115. Set, nail (6)
116. Set, brick (2)
117. Shield safety (5)
118. Shovel, round point (2)
119. Shovel, square point (2)
120. Snips, aviation (2)
121. Snips, tin (2)
122. Solder gun (2)
123. Square, framing w/rafter chart (6)
124. Square, combination (6)
125. Square, try (6)
126. Stripper, wire (8)
127. T-bevel (2)
128. Table, workbench (4)

129. Table, metal shop (1)
130. Tamper, hand (1)
131. Tape, steel (100') (2)
132. Tape, steel (16') (8)
133. Tester, voltage (multimeter) (1)
134. Tong, brick (2)
135. Torch, propane (2)
136. Torch, striker (2)
137. Trowel, bricklaying (20)
138. Trowel, tuck point (1)
139. Trowel, cement finishing (2)
140. Vise, pipe stand w/yoke (1)
141. Vise, pipe stand w/chain (1)
142. Vise, woodworking (5") (8)
143. Wheelbarrow, (6 cu. ft.) (3)
144. Wheelbarrow, brick (1)
145. Wrench, basin (1)
146. Wrench, pipe (8") (2)
147. Wrench, pipe (10") (2)
148. Wrench, pipe (12") (2)
149. Wrench set, combination (SAE) (1)
150. Wrench, adjustable (12") (1)
151. Wrench, adjustable (10") (1)
152. Wrench, pipe (14") (1)
153. Wrench, adjustable (8") (1)
154. Wrench, pipe, (16") (1)
155. Wrench, seat (1)
156. Wrench set, combination (Metric) (1)
157. Wrench set, sockets w/ratchets and pullhandles (SAE ¼", ⅜", and ½" drives) (2)
158. Wrench set, sockets w/ratchets and pullhandles (Metric ¼", ⅜", and ½" drives) (2)

RECOMMENDED INSTRUCTIONAL AIDS

1. Cart, AV (for overhead projector) (1)
2. Cart, AV (for TV-VCR) (1)
3. TV-VCR (1)
4. Video out (Microcomputer to TV monitor) (1)
5. Software for blueprint reading and estimation in Building Trades.

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE FOR BUILDING TRADES I

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Introduction and Orientation

_____ 1. Explain the career opportunities associated with building trades.
_____ 2. Describe vocational student organizations associated with building trades.
_____ 3. Demonstrate job seeking skills to become employed in the building trades.

Unit 2: Safety

_____ 1. Explain personal and general safety rules for working in building trades.
_____ 2. Apply workplace environmental safety procedures.

Unit 3: Construction Math, Measurement, and Blueprint Reading

_____ 1. Apply measurement to the building trades.
_____ 2. Apply blueprint reading to the building trades.

Unit 4: Hand Tools, Power Tools, and Stationary Equipment

_____ 1. Utilize hand tools in the building trades.
_____ 2. Utilize power tools in the building trades.
_____ 3. Utilize stationary equipment in the building trades.

Unit 5: Introduction to Carpentry

_____ 1. Identify terms and demonstrate safety practices related to carpentry.
_____ 2. Apply procedures to construct a project in carpentry.

Unit 6: Introduction to Electrical Wiring

_____ 1. Explain terms, materials, and components related to electrical trades.
_____ 2. Explain safety practices associated with electrical trades.
_____ 3. Perform electrical wiring installation.

Unit 7: Introduction to Masonry

_____ 1. Explain terms and rules for safety in masonry.
_____ 2. Apply procedures for masonry work.

Unit 8: Introduction to Plumbing

_____ 1. Identify terms, materials, and components related to plumbing trades.
_____ 2. Apply procedures in plumbing.

STUDENT COMPETENCY PROFILE
FOR BUILDING TRADES II

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Introduction and Orientation (Review)

_____ 1. Explain the career opportunities associated with building trades.
_____ 2. Describe vocational student organizations associated with building trades.
_____ 3. Demonstrate job seeking skills to become employed in the building trades.

Unit 2: Safety (Review)

_____ 1. Explain personal and general safety rules for working in building trades.
_____ 2. Apply workplace environmental safety procedures.

Unit 3: Advanced Carpentry

_____ 1. Explain terms and safety related to carpentry.
_____ 2. Identify building components.
_____ 3. Install building components.

Unit 4: Advanced Electrical Wiring

_____ 1. Explain terms and safety related to electrical trades.
_____ 2. Identify components of electrical trades.
_____ 3. Install electrical wiring components.

Unit 5: Advanced Masonry

_____ 1. Explain terms and materials related to masonry trades.
_____ 2. Perform procedures used in masonry trades.

Unit 6: Advanced Plumbing

_____ 1. Explain terms and materials related to plumbing trades.
_____ 2. Join copper tubing.
_____ 3. Join polyvinyl chloride (PVC) pipe.
_____ 4. Join steel pipe.
_____ 5. Install water and drainage plumbing systems.

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Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

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